JAYPEE INSTITUTE OF INFORMATION TECHNOLOGY

PROJECT SYNOPSIS

MetroMate

Subject: Data Structures Lab (15B17CI371)

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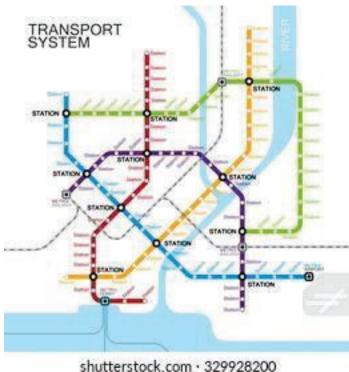
1. TITLE OF THE PROJECT:

MyTrain – A railway station Management system.

2. INTRODUCTION:

The MyTrain project is a comprehensive C++ application designed using various concepts of DSA to provide users with a convenient and feature-rich solution for navigating train systems.

The app's primary functionality includes finding the shortest path between train stations and identifying most frequently used stations by the user which will help him to manage his time better for future travel.

Additionally, it offers an engaging Sudoku solver game for users to enjoy during their train journeys.

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3. ABSTRACT OF THE PROJECT:

i.) Shortest Path Finder:

MyTrain features an efficient algorithm to calculate the shortest path between two train stations. Users can input their current station and destination, and the app will provide them with the optimal route, including transfers if necessary. Real-time updates on estimated travel time and expected arrival at the destination are displayed.

ii.) Strongly Connected Stations:

The app identifies and highlights stations that have strong connections with multiple train lines. Users can explore these stations for easier transfers and access to multiple routes.

iii.) Interactive Train Map:

MyTrain boasts an intuitive and user-friendly train map interface. Users can interact with the map to explore the railway system and plan their journeys.

iv.) <u>**Sudoku Solver Game:**</u>

To keep users entertained during their train rides, the app offers a Sudoku solver game. Users can input Sudoku puzzles, and the app will solve them or generate new puzzles for endless entertainment.

v.) <u>**User Profiles and History:**</u>

MyTrain allows users to create profiles and store their travel history. Users can save their favourite routes and frequently visited stations for quick access.

vi.) <u>**User-Friendly Interface:**</u>

The app features an intuitive and aesthetically pleasing design, ensuring a seamless user experience. Clear icons, easy navigation, and informative tools make it accessible to users of all ages.

TOPICS OF DSA USED

1) Graph

2) Hashing (unordered map)

3) BFS

4) Shortest path-finding algorithm

5) Backtracking (sudoku solver)

6) Queue

7) Vector

8) List

REFERENCES

https://www.geeksforgeeks.org/

https://stackoverflow.com/

https://takeuforward.org/